Energie. Wasser. Leben.

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Position paper

Amendments to the electricity sourcing criteria in the Delegated Act for RFNBO-compliant hydrogen

Delegated Regulation 2023/1184 and extension of the rules to all sectors in accordance with Delegated Regulation 2024/1408

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Summary:

The rapid expansion of renewable energies and the scaling of the hydrogen economy are essential for German and European climate targets. The German government forecasts a hydrogen demand of 95 to 130 TWh by 2030, which will require considerable electrolysis capacities. However, the delegated act 2023/1184 poses major challenges for investment and scaling with its hourly correlation and additionality requirements. According to hydrogen producers, the requirements lead to increased production costs of up to €2.40/kg of renewable H2, reduce the flexibility of hydrogen production and prevent the system-friendly use of surplus electricity. In addition, the obligation to use only additional renewable electricity inhibits investments, which leads to a shortage of volumes, which in turn drives up costs. This slows down the ramp-up of the hydrogen economy, which ultimately reduces Germany's competitiveness as a location for hydrogen production and hinders its international competitiveness.

In order to meet these challenges, BDEW is calling for targeted adjustments to the existing rules. The additionality criterion should only take effect from 2035 instead of 2028. At the same time, the monthly correlation should be retained and the switch to hourly correlation from 2030 should be avoided, or at least the phase-in of the hourly correlation should be postponed to 2035 in line with the additionality. The BDEW also advocates lowering the exemption threshold from the electricity sourcing criteria from the current 90% to 80% renewable energy share in the electricity grid.

There is also a need for greater flexibility in CO2 accounting, for example by calculating the CO2 intensity and the share of renewable energy in electricity procurement on an hourly basis. These adjustments should be implemented by 2026 at the latest and not be subject to a review in form of a report by 2028 as planned. A more flexible handling of the electricity procurement criteria would make hydrogen production more economical, improve grid stability, enable the use of surplus electricity and ensure the competitiveness of Germany and Europe.

1 Situation of the hydrogen market

The accelerated expansion of renewable energies and the rapid ramp-up of the hydrogen economy are essential in order to achieve the German and European climate targets for 2030, 2045 and 2050. Green hydrogen in particular plays a decisive role in the decarbonization of industry, sector coupling and the stabilization of the energy system based on renewable energies. It not only serves as an energy storage medium and flexible energy source, but also as a chemical feedstock for industrial processes. It therefore makes a significant contribution to maintaining the industrial base in Europe. The German government forecasts a hydrogen demand of 95 to 130 TWh by 2030.[1] In order to cover part of this demand, a significant expansion of national electrolysis capacities to at least 10 gigawatts is planned. However, the installed electrolysis capacity in Germany is currently only between 0.05 and 0.15 gigawatts, depending on the source.[2,3,4] The requirements of the delegated act pose major challenges for the German hydrogen industry. Compliance with hourly correlation and additionality represents a significant cost and effort factor that restricts flexibility in production and thus stands in the way of market ramp-up. These requirements are hampering investments that need to be made now and are delaying the urgently needed scaling of green hydrogen.

A key problem is that there is currently not enough green electricity with guarantees of origin (GOs) available to produce the required hydrogen cost-effectively. In addition, electricity prices in Germany remain high, which places an additional burden on the competitiveness of domestic hydrogen production. At the same time, the challenges posed by the ongoing expansion of the grid are making it more difficult to connect potential electrolysis sites to low-cost renewable energy sources. Despite ambitious targets, the market for hydrogen is not taking off and it is becoming apparent that the targets set for 2030 will not be achieved. One of the main reasons for this is the existing regulation, which makes investments more difficult and

[1] https://www.bmwk.de/Redaktion/DE/Wasserstoff/Dossiers/wasserstoffstrategie.html#:~:text=Die%20Bundesregierung%20erwartet%20im%20Jahr,Importanteil%20von%2050%2D70%20%25.

[2] https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-Fokus-Volkswirtschaft/Fokus-2024/Fokus-Nr.-475-November-2024-Wasserstoff.pdf

[3] https://www.ewi.uni-koeln.de/cms/wp-content/uploads/2024/04/EWI_Datengrundlage_Begleitdokument_H2-Bilanz_2024_01.pdf

[4] https://www.wasserstoff-kompass.de/elektrolyse-monitor

widens the gap between supply and demand. A key aspect are the electricity sourcing criteria for green hydrogen, which were negotiated at a time when electricity prices were low, the production costs for hydrogen and its derivatives were estimated to be lower and the industrial base was more stable. However, the economic and energy policy framework conditions have changed considerably. Therefore, the main goal must now be to reduce emissions cost-efficiently instead of sticking to outdated targets. A first lever for lowering production costs and reducing the existing market gap is to adjust the above-mentioned criteria. In order to make the hydrogen economy sustainable in the long term, it must also align with the objectives of the Clean Industrial Deal and the new economic realities in Europe. A pragmatic and investment-friendly regulation is therefore essential in order to accelerate the market ramp-up and not to jeopardize the climate targets.

At EU level, ambitious targets have been set as part of REPowerEU with the non-binding target of 10 million tons (Mt) of domestic production and 10 Mt of imports of renewable hydrogen by 2030. BDEW supports a correspondingly ambitious approach to the hydrogen ramp-up. However, the current market conditions must be taken into consideration when designing the EU regulation for hydrogen. For example, the ACER Market Monitoring Report[5] found that, based on current developments, the production of renewable and low-carbon hydrogen across the EU could amount to just 2 to 4 Mt by 2030. This is also underlined by the European Court of Auditors' special report on the EU's industrial policy on renewable hydrogen[6] . It states that by 2030, projects at an advanced stage in Europe are expected to produce only 2.7 Mt of renewable hydrogen per year, instead of the targeted 10 Mt per year.

The Delegated Act 2023/1184 adopted by the Commission defines specific criteria for the production of renewable hydrogen. The requirements of hourly correlation and the criterion of additionality are of particular importance here. If the electrolyser is commissioned from 2028, producers must ensure that the electricity used comes from newly built[7] , non-subsidized

[5] ACER: *European hydrogen markets - 2024 Market Monitoring Report*,

[6] European Court of Auditors: *Special Report - The EU's industrial policy on renewable hydrogen: legal framework largely adopted - time for a reality check,* Special Report 11/2024: The EU's industrial policy on renewable hydrogen.

[7] See definition in Article 5 of Delegated Act RFNBO 2023/1184: *The installation generating renewable electricity came into operation not earlier than 36 months before the installation producing the renewable liquid and gaseous transport fuel of non-biological origin.*

renewable energy sources in order to guarantee additionality. In addition, from 2030, the requirement will apply that temporal correlation between electricity generation and hydrogen production must be proven hourly. BDEW is urgently calling for a targeted adjustment of the focus of the strict electricity sourcing criteria, which should take place quickly and in line with the desired future state in coordination with the Delegated Act for low-carbon fuels. Changes should be made efficiently and accurately without completely reopening the Delegated Act 2023/1184 in order to ensure the necessary planning certainty for projects at the same time. In this revision of the DA RFNBO, the Commission should also ensure that the requirements for electricity procurement do not create unnecessary hurdles and costs for the market participants concerned. The current draft does not clearly clarify the role of intermediaries, although they have a central function in the cost-efficient distribution of electricity and risk diversification. To enable them to perform this role, they should also be given the option of concluding direct contracts.

Against this backdrop, it is essential to adapt the existing regulations in the EU Delegated Act as quickly as possible in order to enable an efficient and competitive expansion of hydrogen production in Germany and Europe. The common overarching goal clearly is to reduce greenhouse gas emissions, but this cannot be achieved without a functioning market ramp-up.

2 Effects of the strict electricity purchasing criteria

The Delegated Acts finalized in 2023 provide the regulatory framework for the production of green hydrogen, aim to ensure that RFNBO-certified hydrogen meets the targeted greenhouse gas reduction, and that the electricity used is produced in addition to existing renewable generation (i.e. H2 production creates an incentive for the expansion of renewable energies).

The experience and analyses of electrolysis operators at BDEW show that the rigid requirements of the delegated acts with regard to temporal correlation and additionality lead to a significant increase in hydrogen production costs (increase in costs of approx. €2.40 per kg) without addressing the core ideas underlying the rules (CO2 reduction and incentives for the expansion of renewable energy). Due to the German electricity market design and pricing in the German bidding zone, the electricity price is a suitable indicator for the share of renewable generation (and therefore the low CO2 intensity of grid electricity). In times of low (or negative) electricity prices, the feed-in from renewable energy sources is often so high that plants have to be curtailed. Here, electrolysers have the potential to avoid curtailment, utilize surplus

electricity and contribute to the stability of the power grid. The electricity purchase criteria reduce the potential of electrolysis to contribute to the stability of the electricity grid. The delegated act generally allows the use of otherwise curtailed electricity. However, due to the unpredictability of the electricity volumes generated, the additional conclusion of power purchase agreements (PPAs) remains essential in order to increase the utilization of electrolysers. The hourly correlation that will apply from 2030 will then prevent electrolysis operations from having any systemic added value, as they will have to adhere to the specific renewable energy plants under contract.

Maintaining the monthly correlation would reduce GHG emissions in hydrogen production. The reason for this is that hydrogen producers can flexibly optimize their electricity use within a month. For example, electrolysis operators could reduce their production in times of high electricity prices and high CO_2 emissions and shift it to times of lower prices and a higher proportion of renewable energy. The hourly correlation assumes that enough renewable electricity is available per hour. This means that higher volumes of renewable electricity in the grid cannot be absorbed, which means that curtailments still have to be carried out.
According to a study from the Federal Ministry for Economic Affairs and Climate Action of Germany (BMWK) on the system development strategy, a market-oriented operating mode is sufficient to reduce CO_2 emissions. Without monthly correlation, around 20 % more emissions could be generated in 2030 as electrolysers would no longer be able to align their electricity consumption with low prices.[8]

The hourly correlation also makes it more difficult to integrate the hydrogen value chain into the energy system. In some member states, high grid power emissions are problematic for storage facilities, terminals and crackers. A more flexible regulation would stabilize the grid and relieve the hydrogen supply chain. In addition, the obligation to only conclude PPAs with additional renewable energy plants from 2028 is hampering the market integration of older renewable energy plants. More so, market and regulatory uncertainties prevent the conclusion of long-term PPAs over ten years, although these would be crucial for financing new renewable energy plants.

[8] Final report on behalf of BMWK: "Systemdienliche Integration von grünem Wasserstoff", Systemdienliche Integration von grünem Wasserstoff.

Finally, the criteria of hourly correlation and additionality not only prevent the systemic added value of electrolysis and stand in the way of the market integration of renewable energy plants, but also lead to considerable additional costs for hydrogen production, particularly due to their combination. In order to optimize electrolyser capacities economically, i.e. to achieve the highest possible utilization of the plants, project planners must conclude broad portfolios of PPAs with renewable energy plants. Maintaining the temporal correlation while at the same time expanding the PPA portfolio makes it necessary to contract a significantly larger capacity of PPAs than necessary. This increases the costs and the (price) risk of electricity procurement. As a result, the mandatory conclusion of PPAs that comply with the hourly correlation and fulfil the additionality criterion increases the electricity procurement costs by around €2.40 per kilogram, as described above. This in turn must be financed with additional subsidies.

3 Necessary adjustments to the regulatory system

An important and necessary catalyst at this stage for achieving the goal of hydrogen ramp-up in the EU is an adaptation of the regulations of the strict electricity purchasing criteria according to Delegated Act 2023/1184 (see extension to all application sectors in addition to the transport sector by Delegated Act 2024/1408), which, building on the Renewable Energy Directive (2018/2001), defines the Union method for the production of liquid or gaseous renewable fuels of non-biological origin (RFNBO).

The review of the Delegated Acts set out in Article 27 of the Renewable Energy Directive (RED III) as of July 1, 2028, in form of a report, comes far too late to have a positive impact on investment decisions. BDEW is in favour of a significantly earlier adjustment, by 2026 at the latest. This is an important step towards achieving the quantities of hydrogen required for decarbonization. A narrow definition of the criteria, even at an early stage, jeopardizes the ramp-up of the hydrogen economy.

Specifically, BDEW is calling for the phase-in moment of the additionality requirements to be adjusted and the monthly temporal correlation to be maintained (instead of switching to hourly from 2030). The German government presented its position in a letter from Federal Minister Habeck to the former EU Energy Commissioner Simson in September 2024. BDEW also supports the postponement of the focus of the additionality criterion (from the beginning of 2028 to the end of 2035). However, BDEW considers the proposal put forward by Federal Minister Habeck to postpone the temporal correlation criterion by one year to be insufficient. BDEW demands that the correlation remains at monthly and is not tightened to hourly. If this does not happen, the hourly correlation must at least be postponed to 2035, analogous to the

postponement of additionality. In any case, the added value of focusing on an hourly correlation of electricity procurement with regard to CO2 savings should generally be examined, taking into account the above-mentioned market and emission effects. At the same time, more flexibility should be created for the calculation of CO2 emissions in H2 production.

The exemption from the electricity sourcing criteria upon reaching a renewable energy share in the electricity grid should be lowered from 90% to 80%. Such an adjustment would significantly facilitate the production of renewable hydrogen while also making it more cost-efficient. Especially in the current early phase of the hydrogen market ramp-up, a practical and investment-friendly design of the electricity sourcing criteria is crucial to establish sufficient renewable hydrogen production capacities. The existing 90% threshold is too restrictive and risks unnecessarily delaying the market ramp-up. Lowering the threshold to 80% would better align the regulatory requirements with the actual development of European electricity systems while also strengthening European interoperability. In addition, existing volumes of renewable electricity could be utilized in a more system-supportive manner. Electrolyzers would also be able to respond more flexibly to periods of high renewable electricity feed-in, thereby reducing grid congestion. As a result, the need for redispatch measures and the curtailment of renewable generation assets would decrease. Overall, such an adjustment could make an important contribution to accelerating the hydrogen market ramp-up, reducing system costs, and improving the efficient integration of renewable energy sources.
In addition, imported electricity volumes should be assessed in a more differentiated manner when calculating the renewable energy share in electricity sourcing. Currently, electricity imports are generally treated as grey electricity, even though imported renewable grid electricity contributes to decarbonization. An appropriate recognition of verified renewable electricity imports would help make the required threshold more practicable to achieve and would better reflect the integration of the European internal electricity market.

As an additional fulfilment option, it should be possible to balance the CO2 intensity and the share of renewable energy when purchasing electricity from the electricity grid for renewable or low-carbon H2 on an hourly basis (currently only on an annual basis). This means determining the CO2 intensity or the share of renewable energy in the grid electricity in as granular a form as possible (e.g. based on the transmission system operators' day-ahead forecast). This is necessary to map the emissions caused as realistically as possible and to enable a more effective steering effect for the use of grid electricity during periods of high renewable energy availability. This would ensure that the number of hours in which RFNBO-compliant hydrogen is produced could also be increased in bidding zones that still have a relatively high average annual CO2 intensity in the electricity mix. The H2 production costs could thus be further

reduced. Hourly balancing would create an additional incentive for electrolysers to operate in a way that benefits the system.

4 Desired future state

The ramp-up of the hydrogen economy is essential in order to achieve the European climate targets, maintain the industrial base and drive forward sector coupling. However, the current regulatory framework is slowing down this ramp-up - in particular the high hydrogen production costs resulting from the strict electricity procurement criteria. Without adjustments, it will not be possible to close the delta between supply and demand and achieve the ambitious targets for 2030. At the same time, the design of the criteria for the production of low-carbon hydrogen must also be pragmatic and thus enabling, as these quantities also contribute to the supply side and thus stabilize the overall system and reduce costs. BDEW published a detailed position on this in October 2024.

A pragmatic and cost-efficient solution would therefore be to adjust or at least postpone the focus of the electricity procurement criteria without jeopardizing the necessary CO2 savings. This would not only facilitate investment, but also ensure the EU's competitiveness on the global market. At the same time, the international compatibility of the EU requirements must be guaranteed. In the future, Germany will most likely cover up to two thirds of its hydrogen requirements through imports - regulatory requirements must therefore not create unnecessary hurdles for import corridors. National production projects are an integral part of the EU-wide hydrogen market ramp-up and are therefore inherently intertwined with support for imports. Against this background, the BDEW advocates lowering the exemption threshold from the electricity sourcing criteria upon reaching a renewable energy share in the grid from 90% to 80% in order to effectively accelerate the hydrogen market ramp-up.

Adjusting the transition phases of the strict electricity purchasing criteria would be a decisive lever to accelerate the market ramp-up. This is not only in Germany's interest but is also of key importance for its European partners.

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